

**REMARKS**

Claims 1-11 are all the claims pending in the application.

Applicants have amended claims 4 and 5 as supported by, for example, the description at page 5, lines 18-30.

**I. Paragraph Nos. 1-4: Restriction Requirement**

Applicant affirms his election of Group I, claims 1-6 drawn to a porous film.

As noted by the Examiner, however, the provisional election was made with traverse, and Applicant respectfully requests that the present restriction requirement be withdrawn, and that the Examiner provide an examination on the merits of Group II, claims 7-11. In this regard, it is noted that the Examiner has asserted that the product as claimed can be made by chemical- or corona-treatment processes. Claims 1-6, however, specifically recite that the claimed thermoplastic, open-celled, porous polymeric film layer is a plasma-treated film layer. Therefore, Applicant disagrees that the product as claimed can be made by chemical- or corona-treatment processes.

In the event that the Examiner is not persuaded to withdraw the restriction requirement, Applicant points out that where an applicant elects claims directed to a product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim may be rejoined (*see*, MPEP §821.04).

**II. Paragraph No. 5: Objection to the Specification**

Applicant has amended pages 3 and 7 of the specification by providing the updated information, as requested by the Examiner. Accordingly, Applicant respectfully requests that the Examiner withdraw this objection.

**III. Paragraph No. 7: Rejection Under 35 U.S.C. § 112**

Claims 4-5 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

Applicant has made a non-narrowing amendment to claims 4-5, as supported by the description at, for example, page 5, lines 18-30. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw this §112 rejection.

**IV. Paragraph No. 9: Rejection Under 35 U.S.C. §103**

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,650,451 to Yagi, *et al.* ("Yagi").

**Applicant's Response**

Applicant respectfully traverses.

Polyolefins, including polyethylene and polypropylene, are inherently hydrophobic (*see*, page 2, lines 7-8).

A critical feature of the present invention is that the claimed thermoplastic, open-celled, porous polymeric film layer exhibits superior hydrophilicity by virtue of having been plasma-treated not only on the outer surface of the film layer, but also in the inner surfaces of the pores, *i.e.*, the plasma-treatment penetrates into the pores and reacts with their interior surfaces (*see*, page 2, lines 17-24). This critical feature of the invention is reflected by the recitations in claim 1 that (i) the film layer is treated with plasma to make the pore space thereof more hydrophilic and (ii) the plasma-treated film layer exhibits the following hydrophilic properties: a receding contact angle for water of less than 35° and a pore accessibility for water of at least 0.60.

Contact angle is a surface property of the film layer, and is one measure of the film layer's affinity for water.

Pore accessibility is another measure of the film layer's affinity for water. In particular, pore accessibility, which is defined as the ratio of the volume of water picked up by wicking ( $V_w$ )

to the pore volume ( $V_p$ ), directly measures how well the pores have been treated and rendered hydrophilic, *i.e.*, how well the plasma-treatment has penetrated into the pores and reacted with the interior surfaces of the pores.

The Examiner has taken the position that it would have been obvious to arrive at the presently claimed invention by altering the range of the void content and contact angle disclosed in Yagi.

Applicant respectfully disagrees. As will be explained in greater detail below, Yagi does not at all disclose or suggest the claimed film layer that has been plasma-treated to make the pore space thereof more hydrophilic, wherein the film layer has a receding contact angle for water of less than  $35^\circ$  and a pore accessibility for water of at least 0.60.

Initially, it must be pointed out that Yagi does not disclose or suggest plasma-treating not only the outer surface of a film layer, but also the inner surfaces of the pores of the film layer, such that the plasma-treatment penetrates into the pores and reacts with their interior surfaces.

The present specification, on the other hand, discloses that a film layer exhibiting superior hydrophilicity may be prepared by drawing the plasma-treatment into the pores of the film layer. The specification further provides evidentiary support of this fact in the form of inventive and comparative examples, the results of which are presented at Table 3 (page 12). As clearly shown therein, a plasma-treated film according to the present invention achieves superior contact angles and pore accessibility ( $\alpha$ ) values in comparison to identical films that have been corona-treated or untreated. Because the film layers of the inventive and comparative examples are identical (other than the type of treatment), it is respectfully submitted that the examples represent a comparison of the claimed invention with the closest prior art.<sup>1</sup>

Yagi does not make any distinction between plasma-treatment and other forms of surface treatment, such as corona-treatment (*see*, column 15, lines 11-18). Indeed, it is completely

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<sup>1</sup> An invention may be compared with embodiments that are closer to the claimed invention than the prior art being relied upon (*see*, In re Holladay, 199 USPQ 516 (CCPA 1978); Ex parte Humber, 217 USPQ 265 (Bd. App. 1961)).

unexpected from Yagi that a film layer plasma-treated according to the present invention will exhibit superior hydrophilicity, as reflected by the claimed contact angle and pore accessibility.<sup>2</sup>

Furthermore, Yagi provides no disclosure or suggestion instructing a person of ordinary skill in the art as to how to arrive at the claimed film layer having the claimed contact angle and pore accessibility. For example, although Yagi broadly discloses contact angles of not more than 90°, Yagi's films actually possess contact angles that are far outside the claimed range of less than 35° (see, Yagi's Table 2 at column 18, wherein films having contact angles from 64-87° are disclosed). It is only with the benefit of Applicant's disclosure that a person of ordinary skill in the art would understand that a film having the claimed properties may be prepared by plasma-treating not only the outer surface of the film layer, but also the inner surfaces of the pores of the film layer.<sup>3</sup>

Perhaps most importantly, Yagi is completely silent regarding the pore accessibility ( $\alpha$ ) of a film.

The Examiner has asserted that Yagi discloses a pore accessibility of from 30 to 80% at column 14, lines 47-61.

Applicant respectfully disagrees. There is no disclosure at column 14, or elsewhere within Yagi, regarding pore accessibility.

It appears that the Examiner may have arrived at a pore accessibility range of from 30 to 80% based on Yagi's disclosure of a void content of 20-70%.

Pore accessibility, however, is not the inverse of void content. Pore accessibility is actually defined as the ratio of the volume of water picked up by wicking ( $V_w$ ) to the pore volume ( $V_p$ ) (see, page 10 of the application). It directly measures how well the pores have been

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<sup>2</sup> A *prima facie* case of obviousness may be rebutted by showing that the claimed invention achieves unexpected results in comparison to a reference.

<sup>3</sup> The teaching or suggestion to make the claimed invention and the reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure (see, MPEP § 2143 and *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991)).

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treated and rendered hydrophilic, *i.e.*, how well the plasma-treatment has penetrated into the pores and reacted with the interior surfaces of the pores. By reciting contact angle and pore accessibility ranges in the present claims, the claims reflect the fact that the present film layer has been plasma-treated on both the surface of the film layer and inside the pores of the film layer. Yagi does not at all disclose or suggest this element of the claimed invention. Furthermore, by reciting a receding contact angle for water of less than 35° and a pore accessibility for water of at least 0.60, the claims reflect the fact that the claimed film layer exhibits superior hydrophilicity.

For the foregoing reasons, Applicant respectfully requests that the Examiner reconsider and withdraw this §103 rejection.

**V. Paragraph No. 10: Rejection Under 35 U.S.C. § 103**

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,837,365 to Chung, *et al.* ("Chung").

**Applicant's Response**

Applicant respectfully traverses.

As the Examiner acknowledges, Chung is silent regarding plasma treatment (Applicant refers to the paragraph bridging pages 5 and 6 of the Action). The Examiner has taken the position that (i) the claimed film layer and Chung's film are structurally similar and (ii) product-by-process claims must be distinguished based on the product itself and not the method of making it.

Applicant respectfully submits that the claimed film layer is in fact distinguished based on the product itself. Specifically, the claimed product is a plasma-treated film layer. The fact that the film layer is a plasma-treated film layer is an element of the claimed invention that cannot be overlooked by the Examiner and distinguishes the claimed film layer from identical, film layers that are either untreated or not plasma-treated. At the very least, this distinction is

reflected by the claimed properties of the film and supported by the data presented at Table 3 (page 12) of the application.

The present specification, moreover, discloses that a film layer exhibiting superior hydrophilicity may be prepared by drawing the plasma-treatment into the pores of the film layer. The specification further provides evidentiary support of this fact in the form of inventive and comparative examples, the results of which are presented at Table 3 (page 12). As clearly shown therein, a plasma-treated film according to the present invention achieves superior contact angles and pore accessibility ( $\alpha$ ) values in comparison to identical films that have been corona-treated or untreated. Because the film layers of the inventive and comparative examples are identical (other than the type of treatment), it is respectfully submitted that the examples represent a comparison of the claimed invention with the closest prior art.

The Examiner has requested that Applicant clearly state how the examples of the invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Chung (Applicant refers to page 6, lines 13-17 of the Action). It is noted that the invention as claimed relates to a thermoplastic, open-celled, porous polymeric film layer that has been plasma-treated to make the pore space thereof more hydrophilic and that exhibits the claimed properties. Clearly, each of the inventive examples is a plasma-treated, thermoplastic, open-celled, porous polymeric film layer having the claimed properties. As for the Comparative Examples and Chung, an invention may be compared with embodiments that are closer to the claimed invention than the prior art being relied upon (*see, In re Holladay*, 199 USPQ 516 (CCPA 1978); *Ex parte Humber*, 217 USPQ 265 (Bd. App. 1961)). Applicant respectfully submits that there can be no closer comparison than the comparison presented in the present application, which compares identical films subjected to inventive versus non-inventive surface treatments.

Because Chung is silent with respect to plasma treatment, it is completely unexpected from Chung that a film layer plasma-treated according to the present invention will exhibit superior hydrophilicity, as reflected by the claimed contact angle and pore accessibility.<sup>4</sup>

Furthermore, Chung provides no disclosure or suggestion instructing a person of ordinary skill in the art as to how to arrive at the claimed film layer having the claimed contact angle and pore accessibility.

In this regard, the Examiner has pointed out that Chung discloses a membrane having a contact angle of 77° (Chung's Example 2), and that it would have been obvious to arrive at the claimed contact angle range by modifying the contact angle disclosed in Chung.

Applicant respectfully disagrees.

Chung's Example 2, which describes a membrane having a contact angle of 77°, actually demonstrates that Chung discloses films falling outside the scope of the claimed invention. What disclosure or suggestion is there within Chung that would instruct a person of ordinary skill in the art to prepare films having the claimed contact angle of less than 35°? What motivation does Chung provide that would drive a person of ordinary skill in the art to want a film layer having the presently claimed properties? It is only with the benefit of Applicant's disclosure that a person of ordinary skill in the art would understand that (i) a film having the claimed properties may be prepared by plasma-treating not only the outer surface of the film layer, but also the inner surfaces of the pores of the film layer, and (ii) by plasma-treating a film layer according to the present invention there can be provided a film layer exhibiting superior hydrophilicity.<sup>5</sup>

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<sup>4</sup> A *prima facie* case of obviousness may be rebutted by showing that the claimed invention achieves unexpected results in comparison to a reference.

<sup>5</sup> The teaching or suggestion to make the claimed invention and the reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure (*see*, MPEP § 2143 and *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991).

Perhaps most importantly, Chung, like Yagi, is completely silent regarding the pore accessibility ( $\alpha$ ) of a film. As explained above at section IV of this Amendment, pore accessibility is not the inverse of void content. Pore accessibility is actually defined as the ratio of the volume of water picked up by wicking ( $V_w$ ) to the pore volume ( $V_p$ ) (*see*, page 10 of the application). It directly measures how well the pores have been treated and rendered hydrophilic, *i.e.*, how well the plasma-treatment has penetrated into the pores and reacted with the interior surfaces of the pores. By reciting contact angle and pore accessibility ranges in the present claims, the claims reflect the fact that the present film layer has been plasma-treated on both the surface of the film layer and inside the pores of the film layer. Chung does not at all disclose or suggest this element of the claimed invention. Furthermore, by reciting a receding contact angle for water of less than  $35^\circ$  and a pore accessibility for water of at least 0.60, the claims reflect the fact that the claimed film layer exhibits superior hydrophilicity.

Finally, the Examiner has taken the position that the film of Chung would inherently possess the presently claimed pore accessibility for water (*see*, the last 3 lines of page 5 of the Action).

Applicant respectfully disagrees.

A rejection based on an allegedly inherent element(s) must satisfy the requirement that the prior art necessarily possesses the inherent element. As explained in In re Oelrich, 212 USPQ 323, 326 (CCPA 1981) (quoting Hansgirk v. Kemmer, 40 USPQ 665, 667 (CCPA 1939)), inherency may not be established by probabilities or possibilities.

Applying the law to the present case, there can be no clearer evidence that a film layer does not necessarily possess the claimed pore accessibility than the evidence presented at Table 3 of the present specification. Therein, identical films are untreated, corona-treated, or plasma-treated resulting in varying pore accessibility values. Only films plasma-treated according to the present invention possess the claimed pore accessibility.

For the foregoing reasons, Applicant respectfully requests that the Examiner reconsider and withdraw this §103 rejection.



**VI. Paragraph No. 11: Rejection Under 35 U.S.C. § 103**

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,183,856 to Amon, *et al.* ("Amon") in view of U.S. Patent No. 4,445,991 to Arbit ("Arbit").

**Applicant's Response**

Amon is not proper prior art against the present application.

First, by virtue of its filing date (July 25, 1996) and publication date (February 6, 2001), Amon qualifies as prior art solely under 35 U.S.C. § 102(e). Section 102(e) prior art, however, must be "by another," *i.e.*, it must not have the same inventive entity. The sole inventor of Amon (Moris Amon) is the sole inventor of the present application. Therefore, Amon is not "by another" and does not qualify under §102(e).

Second, effective November 29, 1999, subject matter which was prior art under former 35 U.S.C. § 103 solely via 35 U.S.C. § 102(e) is now disqualified as §103 prior art against the claimed invention if that subject matter and the claimed invention "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person" (*see*, MPEP §706.02(l)(1) (February 2000 edition)). This change to 35 U.S.C. § 103(c) applies to all utility applications filed on or after November 29, 1999.

The present application and U.S. Patent No. 6,183,856 were, at the time the invention of the present application was made, owned by Mobil Oil Corporation. As explained at MPEP §706.02(l)(2)(II), this statement alone is sufficient evidence to disqualify the '856 patent from being used in a rejection under 35 U.S.C. § 103(a) against the claims of the present application.

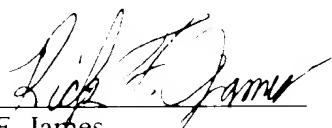
Accordingly, Applicant respectfully requests that the Examiner withdraw this rejection.

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**VII. Conclusion**

Reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Rick F. James", written over a horizontal line.

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE TITLE:

The title is changed as follows:

Plasma-Treated Porous Film

IN THE SPECIFICATION:

The specification is changed as follows:

**Page 3, fourth paragraph:**

One of the suitable processes for preparing open-celled film layers is described in U.S. Application Serial No. 08/686,287, filed July 25, 1996, which issued as U.S. Patent No. 6,183,856.

**Page 7, first paragraph:**

Another suitable ~~methods~~ method for making films with a surface layer with an ~~open-cell~~ open-celled pore structure is described in U.S. Application Serial No. 09/079,807, filed May 15, 1998, now abandoned. According to this method a cavitating agent is used with a particular polymeric matrix material, which is high density polyethylene (HDPE) or medium density polyethylene (MDPE). According to Serial No. 09/079,807, when this material is stretched, separations which form voids are formed not only horizontally, i.e. within or parallel to the plane of the film, but also in the vertical dimension or perpendicular to the plane of the film.

IN THE CLAIMS:

The claims are amended as follows:

4. (Amended) A film layer according to claim 1, wherein the film layer comprises a polymeric matrix material and the polymer of the matrix material ~~of said layer~~ is a polyolefin

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selected from the group consisting of polypropylene, polyethylene, polybutylene and copolymers and blends thereof.

5. (Amended) A film layer according to claim 1, wherein the film layer comprises a polymeric matrix material and the polymer of the matrix material ~~of said layer~~ is an isotactic polypropylene, containing at least about 80% by weight of isotactic polypropylene.